

68, 78 and 86 being independent claims. Claims 19, 50, 60, 68, 78 and 86 have been amended to define still more clearly what Applicant regards as his invention. Support for these claim amendments can be found on substitute specification starting at page 11, line 24 and ending on page 13, line 4; as well as from a comparison of the embodiment described on page 18, lines 15-22 and the embodiment described on page 23, lines 6-12. See page 12, line 1 of the substitute specification: "thus generating uniform high-density plasma." The unamended claims are 1-18, 20-49, 51-59, 61-67, 69-77, 79-85 and 87-110. No new matter has been added and reconsideration of the claims is expressly requested.

It is noted that a substitute specification was required in the Office Action of February 28, 2001 (Paper No. 6). Although this was supplied, it should be understood that under 37 C.F.R. § 1.125(d), a substitute specification is not permitted to be filed in a reissue application. Accordingly, at an appropriate time, Applicant will file an appropriate amendment to withdraw the substitute specification and make the indicated changes in the specification found in the Certificate of Correction.

The amendments to the specification and claims are made under 37 C.F.R. § 1.173 (b) - (g). Accordingly, no clean form of the original claims is permitted. Under 37 C.F.R. § 1.121(i), amendments in reissue cases must be made in accordance with 37 C.F.R. § 1.173. Each changed patent claim is bracketed and underlined under 37 C.F.R. § 1.173 (b) (2) and (d) and each newly added claim must show all changes made since its addition by underlining. Therefore, the Examiner should determine what additional changes were made to any added claim by comparison to the previous version. This procedure was confirmed with Special Projects Exr. Joe Narcavage.

Claims 19-25 and 50-110 stand rejected under 35 U.S.C. §103 as obvious over Suzuki, JP 7-90591 in view of Inoue, JP 5-62796 and Watanabe et al., JP 7-263186. Applicants respectfully traverse the grounds of rejection.

This supplemental amendment responds, in part, to the Advisory Action dated May 20, 2002 (Paper No. 15). In the Advisory Action, the Examiner noted that the arguments made in the Applicant's last response dated April 22, 2002 should best be made in Declaration form. Applicant agrees. A Rule 132 Declaration making the appropriate showings is enclosed as requested. The Examiner noted that the "increase in slot density" which generates unexpected results is not claimed. Applicant agrees. The claims have been amended to recite increased slot density providing uniform high-density plasma.

The Examiner argued that the results relied upon to show unexpected results were modified from the prior art, and that therefore, it is not possible to attribute the unexpected results to either the number of dielectrics or the number of slots. Applicant respectfully disagrees.

As mentioned above, support for the claimed slot density increase that results from the use of a second dielectric material may be found in the substitute specification. In Embodiment 1, described on page 18, lines 15-22, no second dielectric material fills the waveguide tube and the waveguide tube is provided with 20 slots formed at an interval of about 52.5 mm. In Embodiment 5, described on page 23, lines 6-12, a second dielectric material fills the waveguide tube and the waveguide tube is provided with 56 slots formed at an interval of about 20 mm. A comparison of the filled and unfilled waveguides in Embodiments 1 and 5 shows that filling the waveguide with a second dielectric material results in a reduction of inter-slot distance, which allows for the

formation of more slots, and provides an increase in slot density.

The use of a second dielectric material in an endless annular waveguide having a plurality of slots is not found in any of the prior art references that the Examiner has cited. The use of a second dielectric material to fill an endless annular waveguide having a plurality of slots is a patentably distinct step that results in an enhanced plasma.

The unexpected results of an enhanced plasma obtained in Applicant's invention are attributable to the use of the second dielectric material in the endless annular waveguide, which, consequently, permits an increase in number of slots formed. As noted in the attached Rule 132 Declaration and Computer Simulation Figures, the presence of a second dielectric material in a multi-slotted annular waveguide reduces the standing wavelength. A shorter wavelength allows for a reduced distance between slots (see Figure A and color Figure labeled "Top View"). This reduction in inter-slot distance allows for an increase in the number of slots in the slotted annular waveguide tube, which ultimately permits an increase in slot density, while providing enhanced peak strength and uniformity (see color Figures labeled "Oblique View" and "Inner Side View"). Thus, Applicant's unexpected results of an enhanced, higher density plasma are attributable to the second dielectric material.

In the Advisory Action, the Examiner stated that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. Applicant respectfully disagrees that obviousness based on the combination of references can be found here.

The prior art references do not contain a teaching, suggestion or motivation to combine or modify the teachings of the prior art to produce the claimed invention.

Suzuki does not disclose the use of a second dielectric material to fill the interior of the wave guide, which is the central combination of Applicant's present invention. The second dielectric material missing from Suzuki cannot be adapted from the other cited references, Inoue and Watanabe, because those two secondary references are not directed to the use of a plasma processing device with an annular wave guide. Consequently, there is no motivation to combine the elements of either Inoue or Watanabe with Suzuki.

Watanabe, for example, uses a dielectric material to reduce the size of a microwave transmission section, which is not the same problem as irradiating microwaves through the claimed slots. Thus, there is no motivation to use a dielectric in combination with the plurality of slots as presently claimed. Likewise, Inoue, uses a dielectric to achieve a uniform distribution of plasma, but there is no disclosure regarding the consequences of combining a dielectric with an annular wave guide having a plurality of slots, a central combination of each of the present independent claims. Likewise, there is no disclosure of providing the multiple irradiation sites through the slots. Thus, it is not clear why the combination asserted in the Final Action would be expected to achieve the results suggested.

Even if the Applicant presumes for the sake of argument that a suggestion to combine Inoue and Watanabe with Suzuki exists, the unexpectedly superior results demonstrated by the present invention in the above discussion and in the Rule 132 Declaration rebut any possible presumption of obviousness.

The Examiner requested that the original patent must be received before the application can be allowed. The original patent will be surrendered shortly to complete the record and permit the case to be allowed.

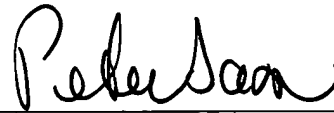
This Supplemental Amendment after Final Action is believed to put the claims in better form for possible appeal and to place this application in condition for allowance, and its entry is therefore believed proper under 37 C.F.R. § 1.116. This Supplemental Amendment after Final Action claiming increased slot density is in response to the concerns raised by the Examiner in the Advisory Action dated May 20, 2002. In addition, entry of the Rule 132 Declaration is solicited since it was stated in the Advisory Action dated May 20, 2002 that evidence is best considered in the form of affidavits in the record.

In any event, however, entry of this Supplemental Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, he she is respectfully requested to contact Applicant's undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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